

# NASA News



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## **Students Learn Science through Experiments in Space Experiment Modules**

Students from across the country spent the week of June 10 at NASA Goddard Space Flight Center's Wallops Flight Facility, Wallops Island, VA., working along side engineers and technicians in the Shuttle Small Payloads Project Office preparing their experiments for a future flight on the Space Shuttle.

The Space Experiment Module (SEM) was developed by NASA as an educational program for students who want to discover more about space by building experiments that may ultimately fly on a Space Shuttle. The SEM program focuses on zero-gravity and microgravity science projects.

With the help of a teacher or mentor, students create, design and build an experiment and apply for the annual national competition through the NASA Student Involvement Program (NSIP). Experiments are qualified for the program through a flight certification process that includes an experiment proposal review. Selected student experiments are flown in NASA provided modules. The SEM carrier system accommodates ten modules in a standard [Get Away Special](#) canister that mounts in the cargo bay of the Space Shuttle.

"This is our third year working with the different NSIP student teams. We work with them through the entire process by helping them mount their experiments into the modules, perform tests prior to installing them in the GAS canisters and then return the experiments to the students following flight," said Chuck Brodell, SEM Project Manager at NASA Wallops Flight Facility. "It's always exciting when there's a Shuttle flight carrying the student experiments."

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The four-member student team from Tomball (Texas) High School proposed to test, actively and thoroughly, commercially available computer hardware during space flight. A small personal computer will run memory and hard disk tests during flight. In-flight data will be compared with pre-flight and post-flight results. Flash memory will be tested passively. An appropriate control group will be used.

The student experiment from Woodside (Calif.) School focuses on the effects of microgravity on earthworms and tests their productivity within that state. The three students conducted several ground-based experiments and extensive research on earthworms to test their reactions to certain situations.

The purpose of the project from the four student Agoura (Calif.) High School team is to demonstrate that convection-based heat-transfer can be created in space using a magnetic fluid known as Ferrofluid. Ferrofluid has to be exposed to a magnetic field for convection to occur. The heat transfer in a Ferrofluid will be tested in microgravity with and without a magnetic field.

Students from Carver High School, Columbus, GA., submitted an experiment for predicting gaseous heat flow in microgravity. The rate of heat flow for gases in microgravity is numerically predictable. Without gravity, the convection process stops contributing to the heat flow. By varying the angle of the chamber and observing temperature changes, the four students feel the effect of convection can be isolated and a temperature in space predicted.

SEM is open to U.S. students in grades K-12 and University level. For further information on the SEM program visit:

<http://www.wff.nasa.gov/~sspp/sem/sem.html>

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